
AI-Powered Public Finance Threat Intelligence & Procure-to-Pay Compliance System

Hackathon Whitepaper (8 Pages)

Page 1 — Executive Summary

Title: AI-Powered Public Finance Threat Intelligence & Procure-to-Pay Compliance System

Overview:

Governments lose millions annually due to procurement fraud, budget leakage, and delayed audits. Manual auditing is slow, error-prone, and reactive, leading to unmonitored risks.

Our solution introduces a **real-time AI-driven Public Finance Intelligence Platform** that:

- Monitors the entire Procure-to-Pay lifecycle
- Flags financial threats, ghost suppliers, and invoice fraud
- Enforces compliance with PFM and PPDA Acts automatically
- Generates audit-ready, real-time dashboards and reports

Key Benefits:

- Transparency across ministries, counties, and state corporations
 - Proactive fraud detection and prevention
 - Reduced audit cycle times
 - Predictive analytics for budget discipline
-

Page 2 — Problem Statement

Challenges in Public Financial Management:

- **Ghost suppliers & fake invoices** → millions lost unnoticed
- **Duplicate or unsupported payments** → financial leakage
- **Collusion in tendering** → unfair contract awards
- **Delayed audits & policy non-compliance** → low accountability

Impact:

- Wasted public funds
- Inefficient budgeting and planning
- Weak governance and reduced public trust

Need:

A **smart, AI-powered system** that protects public money, enforces compliance, and provides real-time actionable insights.

Page 3 — Proposed Solution

Our AI-Powered Solution:

1. AI Threat Intelligence Engine

Detects anomalies, ghost suppliers, and collusion patterns.

2. GenAI Compliance Agent

Enforces PFM and PPDA regulations automatically, before approvals.

3. Real-Time Dashboards & Reports

Audit summaries, supplier risk scorecards, and red-flag alerts.

4. Workflow Automation

Supplier vetting, document extraction, compliance scoring, and risk classification.

5. Predictive Analytics

Budget overrun prediction, contract inflation alerts, and potential corruption hotspots.

Diagram Suggestion: Procure-to-Pay lifecycle with AI & GenAI overlay

Page 4 — Features Overview

Feature	Description
AI Fraud Detection	Detects ghost suppliers, fake invoices, abnormal spending, and collusion.
GenAI Compliance Agent	Automatic checks of PFM/PPDA policies, thresholds, and document validation.

Feature	Description
Auto Reports	Generates audit-ready summaries, compliance reports, deviation analysis.
Workflow Automation	Supplier verification, contract checks, compliance scoring, and alerts.
Predictive Analytics	Predicts high-risk procurement, budget overruns, and irregular expenditure.

Page 5 — Technology Stack & Architecture

Frontend: Next.js, Tailwind CSS, Framer Motion, GSAP

Backend: Hono.js (REST API, RBAC, Audit Logging)

AI Layer: JS/TS ML models, ONNX Runtime, TensorFlow.js, LangChain GenAI

Database: PostgreSQL, Supabase / PlanetScale

Architecture Diagram (Suggestion):

Public Entity / IFMIS Data



Ingestion Layer



AI Threat Detection Engine



GenAI Compliance Agent



Dashboards & Reports

Page 6 — IFMIS Integration & Case Study

IFMIS Integration:

- Secure API connection
- Enhances existing IFMIS capabilities

- Provides real-time alerts and compliance enforcement

Case Study — Ethiopia IFMIS:

- AI overlay prevented budget leakage
 - Automated compliance checks reduced manual auditing by 50%
 - Real-time dashboards improved accountability and transparency
-

Page 7 — Expected Impact

Governments gain:

- **Transparency:** Real-time visibility into spending and suppliers
- **Accountability:** Audit-ready reports with evidence trails
- **Budget Discipline:** Predictive analytics for overruns and anomalies
- **Fraud Prevention:** Ghost suppliers, collusion, and invoice fraud detection

Metrics:

Metric	Expected Improvement
Irregular expenditure	↓ 60–70%
Audit cycle time	↓ 50%
Risk alerts generated	Real-time

Page 8 — Next Steps & Conclusion

Implementation Roadmap:

- 4–6 weeks deployment: compliance automation → full Procure-to-Pay intelligence
- Integration with IFMIS & treasury systems

Policy Implications:

- Supports governance, accountability, and efficient public spending
- Strengthens fiscal transparency and citizen trust

Call to Action:

- Download the whitepaper PDF
- Request a demo for your government unit

Footer:

- © 2025 Public Finance AI Lab
- Compliance Badges: PFM Act • PPDA Act • IFRS • ISO 27001